

**DETAILED ACTION**

***Response to Amendment***

1. In response to the office action from 11/18/2009, the applicant has submitted an amendment after final, filed 2/18/2010, amending independent claims 1 and 7 to incorporate subject matter previously indicated as being allowable over the prior art of record (*Amendment, Page 10*). As such, claims 1, 3, 5-9, 11, 13, 15-18, 20, and 23 are allowable over the prior art of record for the below noted reasons.

**EXAMINER'S AMENDMENT**

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Ebenesar Thomas (*Reg. No. 62,499*) on 3/12/2010.

3. The application has been amended as follows:

In claim 11, change "coder and decoder capable of performing" to -coder and decoder that performs--.

*Allowable Subject Matter*

4. **Claims 1, 3, 5-9, 11, 13, 15-18, 20, and 23** are allowable over the prior art of record.

5. The following is an examiner's statement of reasons for allowance:

With respect to **Claims 1 and 7**, the prior art of record fails to explicitly teach or fairly suggest, either individually or in combination, a method and system that codes a speech signal by dividing a codebook into different codebook groups, determining an optimal code vector within each group simultaneously using a cross-multiplication expression calculated in parallel, and determining an optimal overall codevector from the plurality of optimal group codevectors while further evaluating an index (*as set forth in claims 1 and 7*) when one or more optimal group code vectors have equal cross-multiplication results by selecting a vector with the smallest index, as set forth in claims (*as is set forth in claims 21 and 22*).

Most pertinent prior art:

Kwan et al ("*Implementation of DSP-RAM: An Architecture for Parallel Digital Signal Processing in Memory*," 2001) makes it known that performing vector quantization of a speech signal by dividing a codebook into different groups, placing those groups within different digital signal processing elements, evaluating codebook indices by determining an error score for each index, selecting a local best codevector index within each processing element, and comparing the local best codevector indices to determine an overall codevector result (*Section 3.3., Pages 344-345; and Fig. 6*) is well known in the speech coding art. Kwan does not teach that a optimal group code vector is selected based on a cross multiplication product as is set forth in claims 1

and 7 nor the evaluation of an index by selecting a smaller index value when cross product results are equivalent because Kwan teaches the use of an L2 norm in evaluation of a optimal group codevector. Thus, while Kwan does teach a very similar parallel processing vector quantization within a digital signal processor, Kwan does not fully anticipate the applicant's claimed invention.

Davidson et al (*U.S. Patent: 4,868,867*) overcomes some of the deficiencies in the teachings of Kwan by evidencing that the cross product calculation for indexed vector analysis is well known in the art (*Col. 12, Lines 15-59*). Davidson, however, fails to provide a means for dealing with equivalent cross product results that involves selecting a code vector having a smallest index as is set forth in claims 21-22.

Thus, claims 1 and 7 contain allowable subject matter over the prior art of record.

The dependent claims further limit claims containing allowable subject matter, and thus, are also allowable over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632. The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached at (571) 272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/James S. Wozniak/  
Primary Examiner, Art Unit 2626